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# *Bulbostylis medusae* (Cyperaceae), a New Species from Venezuela

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**ABSTRACT.** *Bulbostylis medusae* Prata, Reynders & Goetghebeur from Venezuela is fully described and illustrated. This species differs from all other South American *Bulbostylis* Kunth species by the combination of long-ciliated leaf sheaths, leaf apices, bracts, and spikelet axes. The new species resembles *B. sellowiana* (Kunth) Palla, and a comparison of the two species is made.

**Key words:** Cyperaceae, *Bulbostylis*, Venezuela.

During a study of Cyperaceae specimens from Venezuela, our attention was caught by a beautiful specimen of *Bulbostylis* Kunth. It was collected by A. Gröger during the preparation of a Florula de Las Lajas–Venezuela within the framework of the research project “Vegetation and ecogeographical differentiation of tropical Inselbergs” (Barthlott et al., 1993). Efforts to identify this specimen using treatments of Cyperaceae for Venezuela, e.g., Schnee (1943), and published keys for *Bulbostylis* in the surrounding regions were unsatisfactory. Since then it has remained unpublished and was designated by Kral

(1998: 511) as “*Bulbostylis* sp. A” in the treatment of Cyperaceae for the *Flora of the Venezuelan Guayana*.

*Bulbostylis* is a Pantropical genus that comprises about 200 species. The highest concentration of *Bulbostylis* spp. can be found in Africa and South America. Diagnostic characters are the setaceous leaves, the pilose orifice of the leaf sheath, and the generally bulbous style base. Most species also have a fruit wall with vertically elongated cells.

***Bulbostylis medusae*** Prata, Reynders & Goetghebeur, sp. nov. TYPE: Venezuela. Amazonas: mpio. Atures, carr. Pto. Ayacucho hacia El Burro, Km 28, 6 km en la desviación hacia el Este, Raudal del Agua Linda, 5°48'N, 67°26'W, rooted in clefts on granite soil, 14 May 1993, A. Gröger 913 (holotype, VEN; isotypes, GENT, TFAV). Figures 1, 2.

Herba perennis, 30–60 cm alta; basis circumcincta vaginis foliorum pallide castaneis, numerosis pilis albis mixtis; radices crassae; culmi caespitosi, teretes. Folia 1/3–



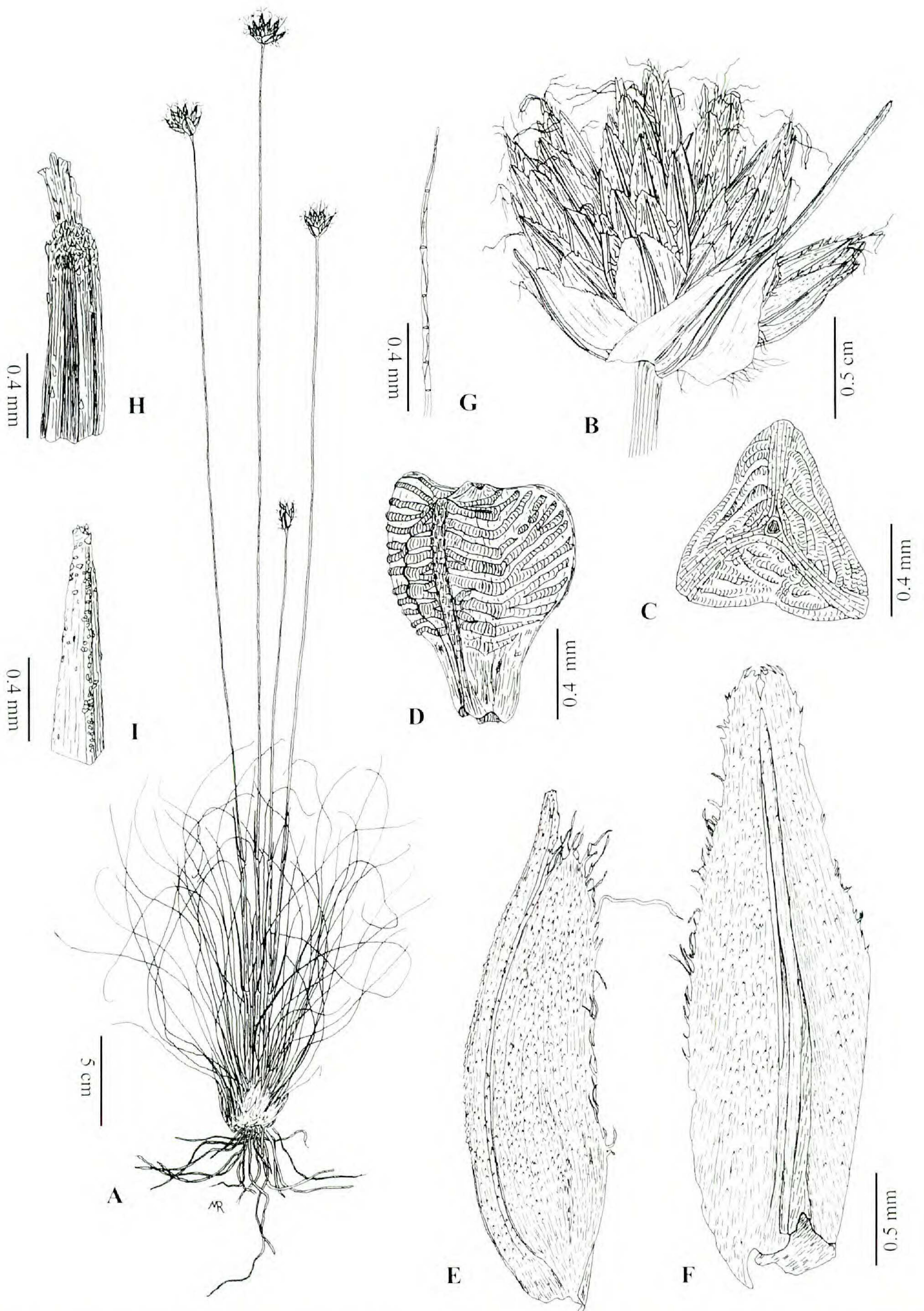


Figure 1. *Bulbostylis medusae* Prata, Reynders & Goetghebeur. —A. Habit. —B. Inflorescence. —C. Fruit, from above. —D. Fruit. —E. Lower glume. —F. Upper glume. —G. Hair from base of glumes. —H. Leaf tip with bunch of hairs. —I. Leaf tip of *B. sellowiana* (Kunth) Palla. Drawn by Marc Reynders: A–H from the holotype Gröger 913 (GENT); I from Furlan, Guilietti, Harley, Wanderley & Varanda 4569 (GENT).

1/2 culmi aequilonga, vaginac longitudinale costatae, papyraceae, apice obliquo, laminae setaceae, recurvatae, 11–22 × 0.03 cm, pagina superiore concava, pagina inferiore convexa, scabra praecipue secus margines atque

nervum centrale. Inflorescentia capitata: spiculae 3 ad 7, ovatae, 11 ad 15 florum; bractea involucrales 3 ad 7, glumiformes; glumae 3–4 × 1.3–1.5 mm, ciliatae. Achenium cordiforme, 0.7–1.5 mm longum, valde trilobatum,



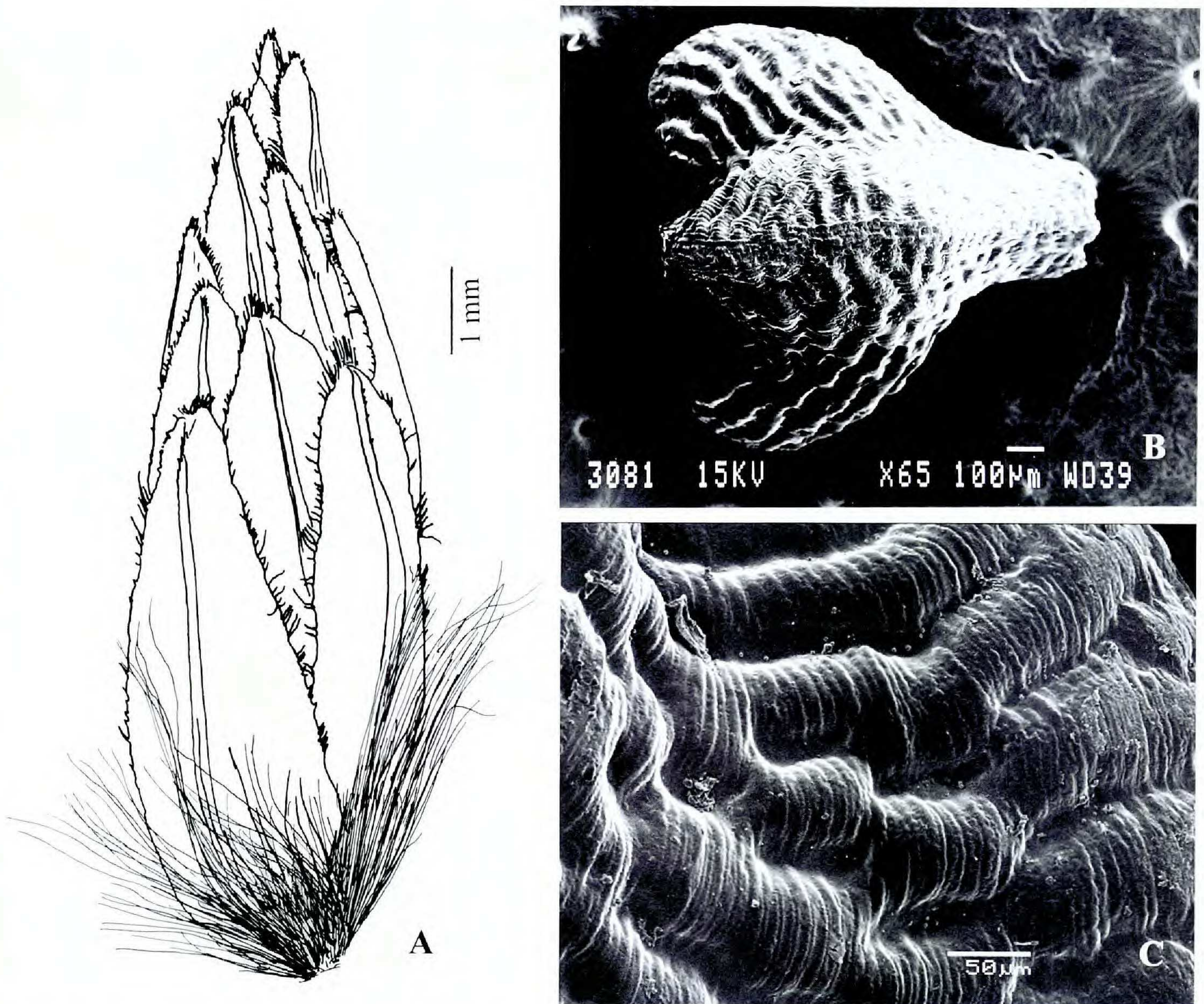


Figure 2. *Bulbostylis medusae* Prata, Reynders & Goetghebeur. —A. Spikelet with long-septate hairs between the glumes. —B. SEM micrograph of fruit. —C. SEM micrograph detail of fruit wall. A–C from the holotype *Gröger 913* (GENT); A drawn by K. Camelbeke.

faciebus valde transversim undulato-rugosis, bulbo styli atrocastaneo, deciduo.

Perennial, caespitose herb, 30–60 cm tall, the base pale brown, obscured by the white pubescence of the lower leaf sheaths, roots thick (Fig. 1A); culm 0.6–1.2 mm thick, terete, longitudinally ribbed, grayish green to yellowish brown toward the base, densely puberulent or scabrid immediately below inflorescence, sometimes also in upper 20 cm, otherwise glabrous. Leaves 11–22 × 0.03 cm, 1/3–1/2 length of culm; leaf blades setaceous, recurved, curling and involute in dried state, scabrous mainly along the margins and central nerve, the apex rounded with a fascicle of short stiff hairs (Fig. 1H), adaxial face concave, smooth, abaxial face convex, canaliculate; sheaths 1–1.5 cm, papyraceous, apex oblique, abaxial face longitudinally ribbed, densely lanose with tufts of white hairs 0.5–1 cm, upper leaves with membranaceous sheaths surrounding the stem, with many long white hairs at their apex. Inflorescence 1–1.5 × 1.3–

2 cm, capitate with 3 to 7 sessile spikelets (Fig. 1B); involucre bracts 3 to 7, suberect, glume-like, widened at the base, surface puberulent, papillose, the lowermost bract 1–1.7 cm, slightly overtopping the inflorescence, the others gradually smaller, margin lacerate, fimbriate, with white hairs 0.3–0.5 cm; spikelets 10–15 × 3–4 mm, narrowly ovoid, acute, 11 to 15 flowers, rachilla internodes with tufts of white septate hairs, 0.5 cm (Figs. 1G, 2A); glumes persistent, 3–4 × 1.3–1.5 mm, lanceolate, light brown, papyraceous, midrib 3-nerved, not excurrent, surface ciliolate, papillose, acute, margin lacerate, ciliate (Fig. 1E, F). Flowers bisexual; stamens 3, anthers 0.5–0.8 mm, linear; style trifid, 2 mm, branches 0.6 mm, style base early deciduous, narrowly thickened, ca. 0.5 mm long. Achene 0.7–1.5 × 0.6–1 mm, trigonous cordiform, broadly 3-lobed (Figs. 1C, 2B), narrowed at base (Fig. 1D), ribs thickened, surface transversely rugose and finely longitudinally striate (Fig. 2C), silica bodies present mainly along the ribs,



Table 1. Morphological differences between *Bulbostylis medusae* and *B. sellowiana*. The character description of *B. medusae* is based on *A. Gröger 913* (GENT) and that of *B. sellowiana* on *Furlan, Guilietti, Harley, Wanderley & Varanda 4569* (GENT) and *Wettstein & Schiffner s.n.* (WU).

	<i>B. medusae</i>	<i>B. sellowiana</i>
Plant base	with white hairs	with orange to reddish hairs
Leaf		
blade	recurved	strictly erect
apex	rounded with a fascicle of short, stiff, white hairs (Fig. 1H)	conspicuously narrowed, always glabrous (Fig. 1I)
Achene		
shape	cordiform	suborbicular-obovoid
apex	strongly trigonous	slightly trigonous
base	conspicuously attenuate	slightly attenuate

brown to dark brown at maturity; pyramidal, ca. 1/4 length of achene.

*Distribution and habitat.* The species described here grows in savannas of *Trachypogon* Nees in oligotrophic sandy soil with dispersed ferrous conglomerates, on granitic outcrops next to *Utricularia* L. The climate in the area is biseasonal with a dry season from December to February and rainy season from March to November, and with maximum rainfall in July. The average precipitation is 2345.97 mm per year, and the average temperature is 26.53°C. The Amazonas state is located in the Guyana–Brazilian Shield region, which is composed mostly of metamorphic and granitic igneous rock considered to be from the Precambrian period (MARNR, 1983; Blancaneaux & Pouyllau, 1977).

Numerous papers have been written about the generic delimitation of *Abildgaardia* Vahl, *Bulbostylis*, and *Fimbristylis* Vahl (e.g., Lye, 1971; Goetghebeur & Coudijzer, 1985). Herein we recognize these three genera as separate; the new species described can be identified as *Bulbostylis*. Important diagnostic characters for the genus were provided at the beginning of this paper.

The new species can be included in Section III of Clarke (1908) based on the presence of a 3-fid style and an inflorescence consisting of one head. In the classification of Osten (1931), the species should be included in the section *Umbellatae*.

*Bulbostylis medusae* is most similar to *B. sellowiana* (Kunth) Palla (Kunth, 1837: 208; Nees, 1842: 27, 89; Böckeler, 1870: 748; Lindman, 1900: 17; Palla, 1908: 179) by its habit and the structure of the inflorescence. *Bulbostylis medusae* differs, however, by the white hairs surrounding the base of the plant, the recurved leaf blades, the rounded apex of the leaves with a fascicle of short stiff hairs, and the cordiform fruit with trilobed apex. A comparison of *B. medusae* and *B. sellowiana* is made in Table 1. The stem base of *B. medusae* is densely covered by tufts of long white

hairs from the abaxial face of the leaf sheaths. The spikelets have similar tufts of long, white, multicellular hairs, evident on the abaxial face of the lower glumes and on the rachilla. These combinations of characters have not been noted in any other species of *Bulbostylis*. *Bulbostylis medusae* also differs from other *Bulbostylis* species by its leaf tip with a fascicle of hairs. The leaf tips of *B. medusae* and *B. sellowiana* are compared in Figure 1H and 1I.

Two other South American species also resemble *Bulbostylis medusae*. These are *B. emmerichiae* T. Koyama (distribution: Brazil: Bahia, Mato Grosso, Goiás, and Minas Gerais) (1974: 429) and *B. lombardii* Kral & M. T. Strong (distribution: Brazil: Minas Gerais) (1999: 850). Both of these species can be distinguished from the new species by the presence of a short, suberect caudex. *Bulbostylis lombardii* also has a persistent style base, while the two others have a deciduous one.

Identification of the new species with a key for North America (Kral, 1971) resulted in *Bulbostylis warei* (Torrey) C. B. Clarke, a species with fimbriate-pectinate involucre bracts and prominently lobed achenes. *Bulbostylis warei*, however, differs from *B. medusae* in its shorter spikelets (4–5 mm), smooth or minutely puberulent scales, habitat, and its North American distribution.

Taxonomic knowledge of American *Bulbostylis* species with capitate or anthelate inflorescences is poor, and a revision is sorely needed. For the unispiculate species, an enumeration (including a key to the species) has already been published (Goetghebeur & Gröger, 1993).

*Etymology.* The specific epithet “*medusae*” refers to the reminiscence of the recurved leaf blades to the hair of Medusa in Greek mythology.

*Paratypes.* VENEZUELA. Amazonas: Ampio, Atures, Puerto Ayacucho, betw. electric power plant & Orinoco River, 14 June 1984, G. Davidse & J. S. Miller 25440 (NY); Piscicultura Station, ca. 8 km S of Puerto Ayacucho, 22 June



1984, *G. Davidse & J. S. Miller 26340* (TFAV); al sur de Puerto Ayacucho, cerca de Mirabal, lado este de la carretera hacia Samariapo, 100 m, 24 Aug. 2006, *S. Nozawa 1147* (TFAV, VEN).

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